

REMARKS

The Office Action mailed December 22, 2008, has been received and reviewed. Claims 1, 3 through 9 and 11 through 23 are currently pending in the application. Claims 1, 3 through 9 and 11 through 23 stand rejected. Applicant has amended claims 1 and 16, and respectfully request reconsideration of the application as amended herein.

35 U.S.C. § 103(a) Obviousness Rejections

Obviousness Rejection Based on U.S. Patent Publication No. 2004/0025791 to Chen et al. in view of U.S. Patent No. 5,716,534 to Tsuchiya et al., U.S. Patent No. 6,089,181 to Suemasa et al. and U.S. Patent No. 6,756,311 to Suzuki

Claims 1, 3 through 9 and 11 through 23 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Chen et al. (U.S. Patent Publication No. 2004/0025791) in view of Tsuchiya et al. (U.S. Patent No. 5,716,534), Suemasa et al. (U.S. Patent No. 6,089,181) and Suzuki (U.S. Patent No. 6,756,311). Applicant respectfully traverses this rejection, as hereinafter set forth.

To establish a *prima facie* case of obviousness the prior art reference (or references when combined) **must teach or suggest all the claim limitations**. *In re Royka*, 490 F.2d 981, 985 (CCPA 1974); *see also* MPEP § 2143.03. Additionally, the Examiner must determine whether there is “an apparent reason to combine the known elements in the fashion claimed by the patent at issue.” *KSR Int’l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1740-1741, 167 L.Ed.2d 705, 75 USLW 4289, 82 U.S.P.Q.2d 1385 (2007). Further, rejections on obviousness grounds “cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *Id* at 1741, quoting *In re Kahn*, 441, F.3d 977, 988 (Fed. Cir. 2006). Finally, to establish a *prima facie* case of obviousness there must be a reasonable expectation of success. *In re Merck & Co., Inc.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986). Furthermore, the reason that would have prompted the combination and the reasonable expectation of success must be found in the prior art, common knowledge, or the nature of the problem itself, and not based on the Applicant’s disclosure. *DyStar Textilfarben GmbH & Co. Deutschland KG v. C. H. Patrick Co.*, 464 F.3d 1356, 1367 (Fed. Cir. 2006); MPEP § 2144. Underlying the obvious determination is the fact that statutorily

prohibited hindsight cannot be used. *KSR*, 127 S.Ct. at 1742; *DyStar*, 464 F.3d at 1367.

Independent Claims 1 and 16

Regarding independent claims 1 and 16 and claims 3-9, 11, 13-15, 17, 23 depending therefrom, Applicant has amended independent claims 1 and 16 to include claim limitations not taught or suggested in the cited references.

Applicant's independent claim 1, as presently amended, recites:

1. A plasma reactor, comprising:
first, second and third power generators wherein the first power generator is coupled to an upper electrode and the second and third power generators are coupled to a lower electrode for supporting a wafer thereon, the first, second and third power generators being frequency-based power generators; and
a controller configured to individually selectively activate the first, second and third power generators to a plurality of activation configurations during a plurality of phases of a duty cycle of a process, wherein at least one of the plurality of activation configurations includes differently activating the second and third power generators to generate at least two different active states on the lower electrode;
wherein *each* of the second and third power generators are configured to *independently receive a signal from the controller and independently apply energy directly to the lower electrode entirely to generate the at least two different active states thereon.* (Emphasis added.)

Applicant's independent claim 16, as presently amended, recites:

16. A plasma reactor, comprising:
a vacuum chamber including upper and lower electrodes therein;
first, second and third power generators wherein the first power generator is coupled to an upper electrode and the second and third power generators are coupled to a lower electrode for supporting a wafer thereon, the first, second and third power generators being frequency-based power generators; and
a controller configured to individually selectively activate the first, second and third power generators to a plurality of activation configurations during a plurality of phases of a duty cycle of a process, wherein at least one of the plurality of activation configurations includes differently activating the second and third power generators to generate at least two different active states on the lower electrode;
wherein *each* of the second and third power generators are configured to *independently receive a signal from the controller and independently apply energy directly to*

the lower electrode entirely to generate the at least two different active states thereon. (Emphasis added.)

While the Office Action, dated December 22, 2008, attempts to combine Chen, Tsuchiya, Suzuki, and Suemasa, these references, either alone or in combination, still do not teach or suggest all of the claim limitations of Applicant's invention as previously claimed and as now presently amended. Specifically, neither of these references teaches or suggests "second and third power generators coupled to a lower electrode for supporting a wafer thereon... a controller...wherein *each* of the second and third power generators are configured to independently receive a signal from the controller. More specifically, it appears to the Applicants that neither Chen, Tsuchiya, nor Suzuki teaches or suggests a plurality of generators coupled to a lower electrode for supporting a wafer thereon. Furthermore, although Suemasa teaches a first RF signal supply 140 and a second RF signal supply 148 coupled to lower electrode 110, Suemasa lacks any teaching or suggestion of a controller coupled to first RF signal supply 140 and second RF signal supply 148. Therefore, the cited references, either alone or in combination, lack any teaching or suggestion of wherein *each* of the second and third power generators are configured to independently receive a signal from a controller.

Furthermore, the cited references lack any teaching or suggestion of "wherein each of the second and third power generators are configured to...*independently apply energy directly to the lower electrode entirely to generate the at least two different active states thereon.* Neither Chen nor Tsuchiya nor Suzuki teach or suggest generating at least two different active states on a single electrode. Moreover, Chen, Tsuchiya, and Suzuki, either alone or in combination, lack any teaching or suggestion of independently applying energy directly to a single electrode from distinct generators to generate two different active states. Furthermore, although Suemasa teaches a first RF signal supply 140 and a second RF signal supply 148 coupled to lower electrode 110, Suemasa lacks any teaching or suggestion that signal supply 140 and signal supply 148 *independently apply energy to electrode 110 to generated two different active states.* Rather, with reference to FIG. 1, Suemasa specifically teaches that a modulator 152 of the high frequency RF section (i.e., RF signal supply 148) receives the low frequency RF signal from the first RF signal supply 140, as well as the high frequency RF signal. The modulator 152 varies the

amplitude of the high frequency RF signal (i.e., the signal output from signal supply 140) in accordance with the phase of the low frequency RF signal (the signal output from RF signal supply 148). Therefore, in the embodiment depicted in FIG. 1, first RF signal supply 140 and a second RF signal supply 148 *do not independently apply energy to lower electrode 110.* Furthermore, with respect to FIG. 4, first RF power supply 171 and second RF power supply 172 are not configured to apply energy to a single electrode *to generate two different active states.* Rather, in the embodiment described in reference to FIG. 4, it appears to the Applicant that an energy state of electrode 110 remains consistent.

Therefore, the cited references, either alone or in combination, lack any teaching or suggestion of the second and third power generators being configured to *independently apply energy directly to the lower electrode entirely to generate the at least two different active states.*

Therefore, since neither Chen nor Tsuchiya nor Suzuki nor Suemasa teach or suggest Applicant's claimed invention including the element of "wherein each of the second and third power generators are configured to independently receive a signal from the controller," or the element of "wherein each of the second and third power generators are configured to ...independently apply energy directly to the lower electrode entirely to generate the at least two different active states thereon," these references, either individually or in any proper combination, cannot render obvious, under 35 U.S.C. §103, Applicant's invention as presently claimed in amended independent claims 1 and 16. Accordingly, Applicant respectfully requests the rejections of presently amended independent claims 1 and 16 be withdrawn.

Dependent Claims 3-9 and 11-23

The nonobviousness of independent claim 1 precludes a rejection of claims 3-9, 11 and 13-15 which depend therefrom because a dependent claim is obvious only if the independent claim from which it depends is obvious. *See In re Fine*, 5 U.S.P.Q.2d 1596, 1600 (Fed. Cir. 1988), *see also* MPEP § 2143.03. Therefore, Applicant requests that the Examiner withdraw the 35 U.S.C. § 103(a) obviousness rejection to independent claim 1 and claims 3-9, 11 and 13-15 which depend therefrom.

The nonobviousness of independent claim 16 precludes a rejection of claims 17-23 which

depend therefrom because a dependent claim is obvious only if the independent claim from which it depends is obvious. *See In re Fine*, 5 U.S.P.Q.2d 1596, 1600 (Fed. Cir. 1988), *see also* MPEP § 2143.03. Therefore, Applicant requests that the Examiner withdraw the 35 U.S.C. § 103(a) obviousness rejection to independent claim 16 and claims 17-23 which depend therefrom.

ENTRY OF AMENDMENTS

The amendments to claims 1 and 16 above should be entered by the Examiner because the amendments are supported by the as-filed specification and drawings and do not add any new matter to the application.

CONCLUSION

Claims 1, 3-9 and 11-23 are believed to be in condition for allowance, and an early notice thereof is respectfully solicited. Should the Examiner determine that additional issues remain which might be resolved by a telephone conference, the Examiner is respectfully invited to contact Applicants' undersigned attorney.

Respectfully submitted,



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